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FLEUR DE LIS FISHERIES

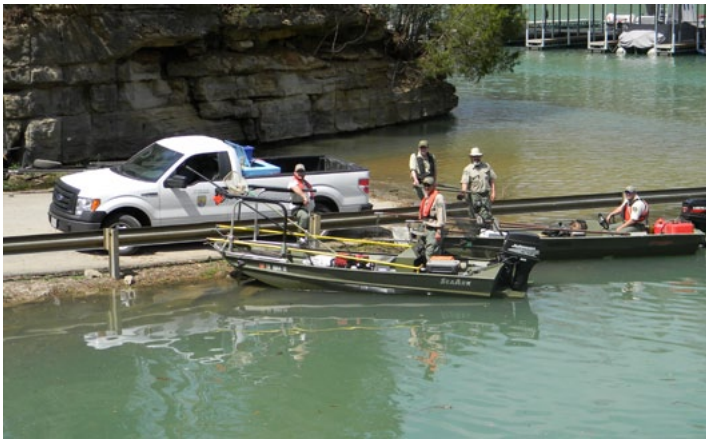
US Fish and Wildlife Service

U. S. Corps of Engineers, Tennessee Wildlife Resource Agency, Friends of Dale Hollow NFH and U. S. Fish and Wildlife Service employees work together to place mussel culture cages in floating racks housed in the Corps boat dock on Dale Hollow Lake, TN

Update on the Dale Hollow and Natchitoches NFH's Joint Mussel Project

By: Andy Currie and Tony Brady

What started as a simple phone call between Andy Currie (Project Leader, Dale Hollow NFH) and Tony Brady (Mussel Biologist, Natchitoches NFH) has turned into an ongoing mussel culture project between the two facilities. When challenged by Coldwater Program Supervisor, Deb Burger, to involve the cold water hatcheries into the Strategic Habitat Conservation and Landscape Conservation Cooperative frameworks, Brady having worked with Currie in the past thought that Dale Hollow NFH would be the perfect place to start. Brady and Currie then solicited support for this



Tennessee Wildlife Resources Agency staff help collect host fish for the Dale Hollow NFH mussel project.

project from the Tennessee Ecological Services Field Office, U.S. Army Corps of Engineers (Corps), Tennessee Wildlife Resources Agency (TWRA), Tennessee Technological University and the Tennessee Cooperative Fishery Research Unit (TCFRU). Every office involved played a critical role in providing funding, supplies, mussels, fish, expertise, or facilities. Work on this project began when cages were assembled at Dale Hollow NFH by the Friends of Dale Hollow NFH in December 2012. On May 13-15, 2013, Mussel Biologist Brady directed the placement of mussel culture cages in Dale Hollow Reservoir. The floating racks, delivered by Brady from Louisiana, were placed into a Corps owned floating boat dock located at the front of a cove used by the Corps to moor their work barge. The cages were taken into the covered boat dock and fitted together with their bases. Don Hubbs, TWRA Mollusk Recovery Program Coordinator, supplied the river sand which was placed in the bottom of each cage. Friends Group members Paul Boyce and Russ Cain moved the two lots of host fish, each infested with a different species of mussel glochidia, from the hatchery to the boat dock where they were placed into the cages. The cage tops were secured with plastic wire ties and moved into place on the racks by Brady and Wade Hubbs. Corps Rangers Brock Jones and Brad Potts assisted the effort by using a Corps boat to put the racks in place and helped secure the tops of the cages. The host fish will remain in the cages for approximately three weeks, at which time staff at TCFRU will release them into the lake. The juvenile mussels will burrow into the sand substrate and remain in the cages until growth and survival can be checked in the fall. The Corps has demonstrated a strong commitment to this cooperative project by allowing the use of the boat dock. It is an ideal platform for such a project as it is secure, does not require adjustment as the lake level rises and falls, and does not present an obstacle for boat traffic.

U. S. Army Corps of Engineers Rangers help ready the mussel culture cages before being placed into the floating rack

Three-Inch Bass Study at Natchitoches National Fish Hatchery

By: Jan Dean

As was reported earlier for January and March, the Louisiana Department of Wildlife and Fisheries desired to produce three-inch largemouth bass to increase survival once stocked in public water bodies and thus to eventually produce more benefits to the angling public in Louisiana. To determine if this could be done feasibly, a joint study was planned to be conducted at both the LDWF Booker-Fowler Fish Hatchery and at the Natchitoches National Fish Hatchery. Sixteen ponds at each hatchery were stocked at the nominal rates of 40, 30, 20 and 10 thousand fry per surface acre; four ponds were stocked at each rate at each hatchery. The design included harvest after 60 days with management for zooplankton but without supplemental feeding.

The usual practice in recent years at Natchitoches has been to stock bass ponds at the rate of 75 k per acre to produce fish of 1½ to 2 inches long versus an earlier practice of stocking at 100 k per acre to produce somewhat smaller fish. The thought was that the larger fish would have better survival and more eventual benefit to anglers. This year, the LDWF Inland Fisheries biologists wanted to extend that idea to produce even larger fish for stocking in public waters. It has been our experience that producing bass to two inches is near the limit if the food is based upon zooplankton and perhaps a few insect nymphs or other invertebrates. Beyond that size, these predators would be expected to turn on each other. It doesn't pay to be a small member of a predator cohort which can easily become cannibalistic at some point. In nature, it is an "eat or be eaten" world, and you can imagine on which side of the equation is a small member of the group. We expected cannibalism to increase dramatically after two inches or so and the consequent survival or return rate to plummet. A prediction in January was to expect perhaps only one-fourth the normal number of fish from the ponds as for producing smaller fish.

LDWF biologist Chase Chatelain of Booker-Fowler Fish Hatchery measuring largemouth bass reared at Natchitoches National Fish Hatchery for the 2013 study to produce three-inch fingerlings.

The sixteen study ponds at Natchitoches were stocked March 25 and were harvested May 21, 22 and 23. The average lengths of harvested bass for the 40 k, 30 k, 20 k and 10 k fry stocking treatments were 2.65, 2.81, 3.00 and 2.84 inches, respectively. The trend in average length was upward with lower stocking rates, as might be expected, but there appears to be a disconnect with those stocked at the lowest rate. The average length of those stocked at 10 k per acre was about the same as those stocked at 30 k per acre. Did we produce some largemouth bass fingerlings averaging three inches without supplemental feeding? The simple answer is yes, at least for one stocking rate treatment.

Another factor to consider is the rate of return on those initially stocked. As mentioned above, it was expected that the zooplankton population would crash after this extended time of 60 days since stocking. The normal practice is to harvest ponds in about 30 days post stocking. After that, the fish will begin to run out of their natural foods in the pond, but the plan for the study was to harvest ponds after 60 days. In our case,

A sample of fish being weighed as part of the 2013 bass fingerling study at Natchitoches NFH.

ponds were harvested 57 to 59 days after stocking, so that basically fulfilled the intent of the study. Because of other demands at both hatcheries for the following week, to delay any more would have meant about two weeks more in the ponds, and no substantial growth was expected during that time because the pond food levels likely were extinguished except for cannibalism. Also, high water temperatures are not conducive to fish survival after handling, so it was time to harvest the ponds.

Returns of fingerlings harvested versus fry stocked were very low at Natchitoches, even lower than expected. Ponds stocked at the higher two stocking rates had returns of only 15 to 36 percent, and not all of them could be harvested, nor could any of the ones stocked at the lower two stocking rates. What was the problem? Mainly crawfish – lots of crawfish -- and some tadpoles. These ponds produced in total thousands of pounds of crawfish. We were able to obtain length samples from almost all of the ponds, so the bass were there in some numbers, but they could not be effectively separated from the crawfish in many of the harvests.

Without revealing too much about the June harvest of fourteen other bass ponds not on the study, let me say that their return rate was higher, and they were stocked at the typical rate of 75 thousand per acre.

Results from the companion study at Booker-Fowler Fish Hatchery will be released by the LDWF at a later time. Perhaps I can say that the returns were much higher there and the fish size was somewhat smaller. Think of calves on a pasture. The grass production on ten acres of land will only support so many calves. If there are more calves on the pasture than can be fully supported, then the growth and well-being of the calves will suffer. The same holds true for fish in a pond. If there are too many fish for the food supply, then their growth will decrease. One big difference between ponds at Natchitoches and at Booker-Fowler is that the ones at Booker-Fowler have a liner and the ones at Natchitoches have an earthen bottom and sides. There are pros and cons to having liners. Our ponds were flooded for two months plus the two weeks or so prior to stocking, and that allowed substantial development of crawfish populations in our ponds. The liners at Booker-Fowler prevent crawfish and other natural populations to develop such that their harvests are much cleaner in terms of only bass or other target species which may have been stocked.

Three-inch bass can be produced at Natchitoches National Fish Hatchery under certain conditions but at great cost in terms of low returns on initial stocking numbers of fry. The results of this study indicate that it is possible but likely not practical to produce such large bass fingerlings here without supplemental feeding.

Natchitoches National Fish Hatchery is Visited by the Young at Heart

By: Tony Brady

In the spring, most fish hatcheries get calls from a number of schools seeking a field trip for their kids, as they finish up the school year, and Natchitoches National Fish Hatchery is no exception. As April came to a close, it wasn't the young coming out to visit, but instead the young at heart. Two retirement/care facilities, Touch of Grace Adult Day Care and Health Center and the Toledo Nursing Home, scheduled visits to the hatchery on the last two days of April, respectively. Each visit varied depending on the ability of the residents visiting, and ranged from a simple viewing of the Aquarium, to a viewing of the Aquarium followed by a presentation on the activities of the hatchery and on freshwater mussels. Given the nice weather this time of year, the residents took advantage of the hatchery's picnic tables that are shaded by three old live oak trees. The Hatchery staff enjoyed talking with the residents and helping bring a smile to their faces during their time here.

Residents from Touch of Grace Adult Day Care enjoying a visit to the hatchery.

Eels on a Plain, a Gulf Coastal Plain, that is

By: Jan Dean and Casey Cox

Okay, we admit that is a cheap way of relating to both a movie about sinuous creatures and to our Gulf Coastal Plain and Ozarks Landscape Conservation Cooperative. Casey Cox, a graduate student at the University of Central Arkansas and Pathways Intern for the Fish and Wildlife Service, wrote the following three paragraphs about a little project in w hich we were involved. Casey works with Lindsey Lewis of the Conway, Arkansas Ecological Services office, also called the Arkansas Field Office.

The American eel (Anguilla rostrata) is a catadromous fish that undergoes an impressive migration to complete its life cycle. Recent declines in parts of its range believed to be caused by blocked migration routes, altered marine production, overfishing, parasitism, and contaminants have led to the USFWS being petitioned to list the eel under the Endangered Species Act. Numerous eel studies have been conducted in Atlantic discharging rivers; however, little data exist on eels in the Mississippi River basin. Currently, the U.S. Fish and Wildlife Service's Arkansas Field Office, Arkansas Game and Fish Commission, and University of Central Arkansas are conducting a collaborative study focusing on upstream migration and population demographics of the American eel in the Ouachita and White River watersheds in Arkansas.

Electrofishing for eels in Southern Arkansas.

Casey Cox holding an anesthetized American eel at Natchitoches National Fish Hatchery.

Multiple sampling techniques have been employed, but electrofishing has shown to be the most effective. While electrofishing has provided opportunities to collect specimens, eels very rarely exhibit taxis, i.e. attraction to an electrode, but instead remain immobilized on the stream bottom. In the clear, shallow waters of the Middle Ouachita system, eels are visible on the stream bottom and in most cases can be collected. In the Lower White River, turbidity decreases visibility and results in missing potential specimens. Achieving taxis would allow deeper, more turbid waters to more effectively

An eel in the study tank next to one of the wire mesh electrodes used to administer a mild shock. The eels were moved from the electrodes before a shock exposure of about four seconds.

be sampled and is a critical goal for the White River component of the study.

Eight yellow-phase American eels collected from the Caddo River, Clark County, Arkansas were transported to the Natchitoches National Fish Hatchery to Dr. Jan Dean with the goal of finding out what it takes to achieve taxis on eels. Dr. Dean and the Natchitoches staff graciously assisted us and welcomed the opportunity to work with a new fish. Multiple trials with the eight individuals provided insight into the adjustments needed to more effectively sample for the American eel in deeper, more turbid water. In the coming months these new techniques will be used in the field and based on the results observed with the Natchitoches eight should greatly increase our sampling efficiency as well as increase our knowledge of the American eel in the Mississippi River Basin.

Let me say that we tried both continuous and pulsed direct current on the eels in a tank study set up so that the electrical field was uniform throughout the tank. We also tried different pulse frequencies and duty cycles, i.e. the percent of time that the current is on. We observed less taxis than desired, but a few electrical waveforms seemed promising in that regard. The threshold power needed for immobilization was quantified for different waveforms and for two sizes of eels. We hope to continue this tank study with more eels next spring and to further test these waveforms in the field. Have you ever heard the term "slippery as an eel?" You can bet on it.

Louisiana National Guard Youth Challenge and Natchitoches NFH Help at Risk Youth through Archery

By: Tony Brady

The sport of archery is growing among today's youth in part due to movies such as "The Hunger Games" "The Avengers" and "Brave". While these movies are peaking the interest of American children, the National Archery in the Schools Program (NASP) is providing a means for these same kids to experience the joy of shooting a bow and arrow. In Louisiana, NASP is called Archery in Louisiana School (ALAS), and the program is seeing the same kind of growth as in other states. While teaching archery in schools provides an opportunity for children to learn and even compete in a sport they never thought possible, one program is using archery to help change the lives of the youth they are teaching. The Louisiana National Guard Youth Challenge Program takes in at risk youth and gives them the opportunity to change their lives by learning important life coping skills. One of these life coping skills is being able to focus their energy, time, and attention in order to complete tasks. This is where archery plays a huge role in their education. Using NASP's 11 steps to archery success, NASP instructors teach the youth how to focus on one step at a time, in order to become a successful archer. Coming into the program these at risk youth somehow know about the archery program and start asking if and when they will get to do archery. It is through this desire to shoot a bow and arrow that these at risk youth show the first signs of really wanting to focus to achieve a desired goal, something as simple as hitting a bulls eye.

The Louisiana National Guard Youth Challenge Archery Program is headed up by Major Kenneth Capello who is currently serving our country overseas. While Major Capello is deployed, Dominique Foster is filling in and attending some additional NASP training. Foster, who was previously trained as a Basic Archery Instructor (BAI) for NASP, attended training on 24 April to become a level two Basic Archery Instructor Trainer (BAIT). Staff at Natchitoches National Fish Hatchery assisted Rob Stroede, Louisiana Wildlife and Fisheries State Coordinator for the ALAS program, train Foster to be a BAIT as well as 10 additional teachers to become BAI's. As a BAIT, Foster will be able to train other staff at the Louisiana National Guard Youth Challenge Program to become archery instructors. Currently, archery is only taught at Camp Beauregard in Pineville, LA. Now that the Youth Challenge Program has their own BAIT, additional staff members can be certified as BAI's at the other two facilities: Camp Minden near Bossier City and The Gillis Long Center in Carville near Baton Rouge. You may ask what all this means. Camp Beauregard currently teaches archery to at least 500 at risk youth a year. When archery is implemented at Camp Minden and The Gillis Long Center, the number of at risk youth who will be exposed to archery will nearly triple to over 1,400 youth a year. As more young men and women are exposed to the discipline of archery and learn to focus, their lives are going to change. This will help make Louisiana and the world a better place. The staff at Natchitoches NFH would like to take a moment to thank Major Capello, as well as the rest of our Armed Forces and their families who sacrifice more that most of us will ever know to protect our great nation. THANK YOU!!

Foster standing behind Sgt. Christopher Shader, also from the Youth Challenge Program, on the shooting line waiting on the whistle to shoot.

Natchitoches National Fish Hatchery Celebrates Earth Day with the Alexandria Zoo

By: Tony Brady

The Alexandria Zoo in Louisiana celebrates Earth Day by putting on their annual Party for the Planet event, and Natchitoches National Fish Hatchery (NNFH) has proudly been a part of Party for the Planet for the past three years. The organizers for Party for the Planet ask that participants provide some sort of hands on activity or educational material for the kids visiting the zoo. On April 20th the NNFH set up a tent to allow the kids to get artistic with fish. Gyotaku, which is Japanese for Fish Printing, traditionally involves painting a fresh fish and then pressing the fish onto a piece of paper thus creating the image of the fish. As you may have guessed, fish do not stay fresh in the warmth of our Louisiana weather, so to keep the experience pleasant for all involved, the hatchery uses rubber fish that were molded from the real thing. Kids paint the rubber fish and then press a piece of paper on top of the fish to transfer the image. After the event, the Zoo reported that about 2000 people (adults and children) attended Party for the Planet. Judging by the amount of paper that remained from the ream used for the fish prints, the hatchery booth was visited by over 350 kids. Natchitoches NFH would like to thank the volunteers from the Louisiana National Guard Youth Challenge and Hicks High School for their help running the hatchery booth to keep things swimming along. We would also like to thank the Alexandria Zoo for inviting the hatchery back to participate in their event, and also for supporting the hatchery during our Open House and Kids Fishing Derby.

Two young artists show off their fish prints during Earth Day at the Zoo.

Volunteers from Hicks Highschool and the Louisiana National Guard Youth Challege Program help ensure a good time for all.

First annual Fishing Expo Held in Natchitoches

By: Tony Brady

May 4th marked the beginning of what will be an annual Fishing Expo in Natchitoches, LA. Held on the campus of Northwestern State University in Prather Coliseum and hosted by the Cane Country Fly Casters (CCFC), this Expo allowed folks to come and learn about all the different types of fishing available in Louisiana and the surrounding states. At the Expo, visitors could take fly casting lessons, watch incredible fly tying demonstrations or they could sit in on classes that covered bass fishing, crappie fishing and even saltwater fishing. Kayaking and canoeing lessons were also held across from the coliseum on Chaplin Lake In addition to learning about all the recreational fishing in the area, Natchitoches National Fish Hatchery and the Friends in Support of the Hatchery (FISH) were asked to be a part of the Expo to talk about the Hatchery's fish and habitat conservation work and outreach efforts that take place between the Hatchery and FISH. An estimated 400 people attended the Expo and, while they were there, were able to check out the latest and greatest in fishing gear, guided trips and fish related home décor. One local doctor had a booth set up to examine folks for skin cancer and talk about ways to avoid future visits to his office. The folks with Cane Country Fly Casters were very happy with the turnout and hope that next year will bring even more folks to Natchitoches.

Hatchery staff and FISH members greet folks at their booth during the Fishing Expo.
Photo by CCFC

Natchitoches NFH Biologist Attends Louisiana Tech University as Guest Lecturer

By: Tony Brady

Last November, I had the pleasure of giving a tour of Natchitoches National Fish Hatchery to Dr. Thea Edwards, Assistant Professor of Biology at Louisiana Tech University. In the course of the tour, Dr. Edwards learned about the conservation activities of the hatchery and our partners at both the state and federal level. When the subject of the tour focused on freshwater mussels, I was able to show Dr. Edwards a slideshow about the life history of freshwater mussels and then explained how ongoing research at the hatchery was helping to better understand the life history of the Louisiana pearlshell mussel. The Louisiana pearlshell mussel is a federally threatened species only found in two Louisiana parishes. The Louisiana pearlshell project and the life history of freshwater mussels in general was new information to Dr. Edwards and she thought it would be a great addition to her Ecology class. Dr. Edwards asked if I would be interested in coming to Louisiana Tech University and giving a guest lecture to her upcoming class. After a couple of phone conversations and e-mails the date of May 6th was selected for the guest lecture. Armed with a couple different presentations to cover whatever direction the lecture may go, I made the two hour drive to Ruston, LA, and at 9:30 am I sat in my first college class since I graduated nearly 13 years ago. Forty-five minutes later, the students were still asking questions as the class ended. Dr. Edwards was impressed with the presentation and lecture and asked if I would be willing to come back in the fall. Assuring her that I would be willing, we agreed to touch base in September to set a date for the next lecture.

Brady is head of the class at Louisiana Tech Univerisity